



Armed Forces College of Medicine AFCM



Topography of Upper Limb

Dr: Shereen Adel

INTENDED LEARNING OBJECTIVES (ILO)



By the end of this lecture the student will be able to:

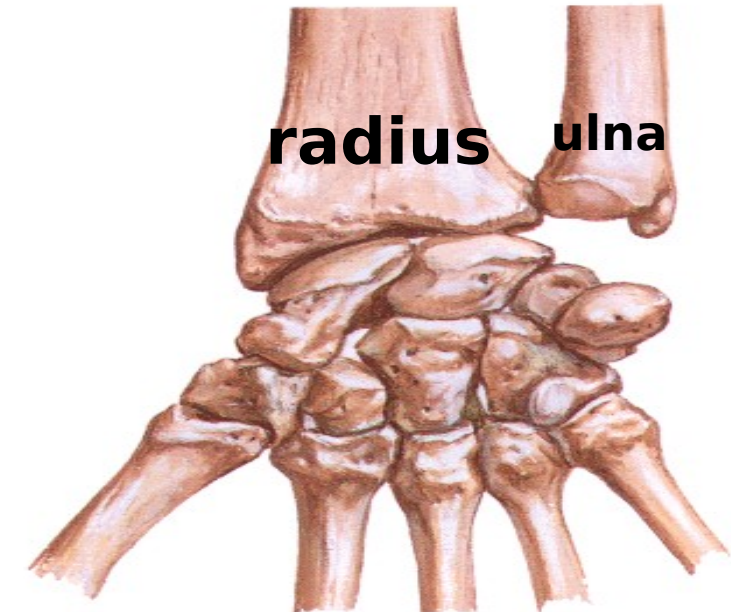
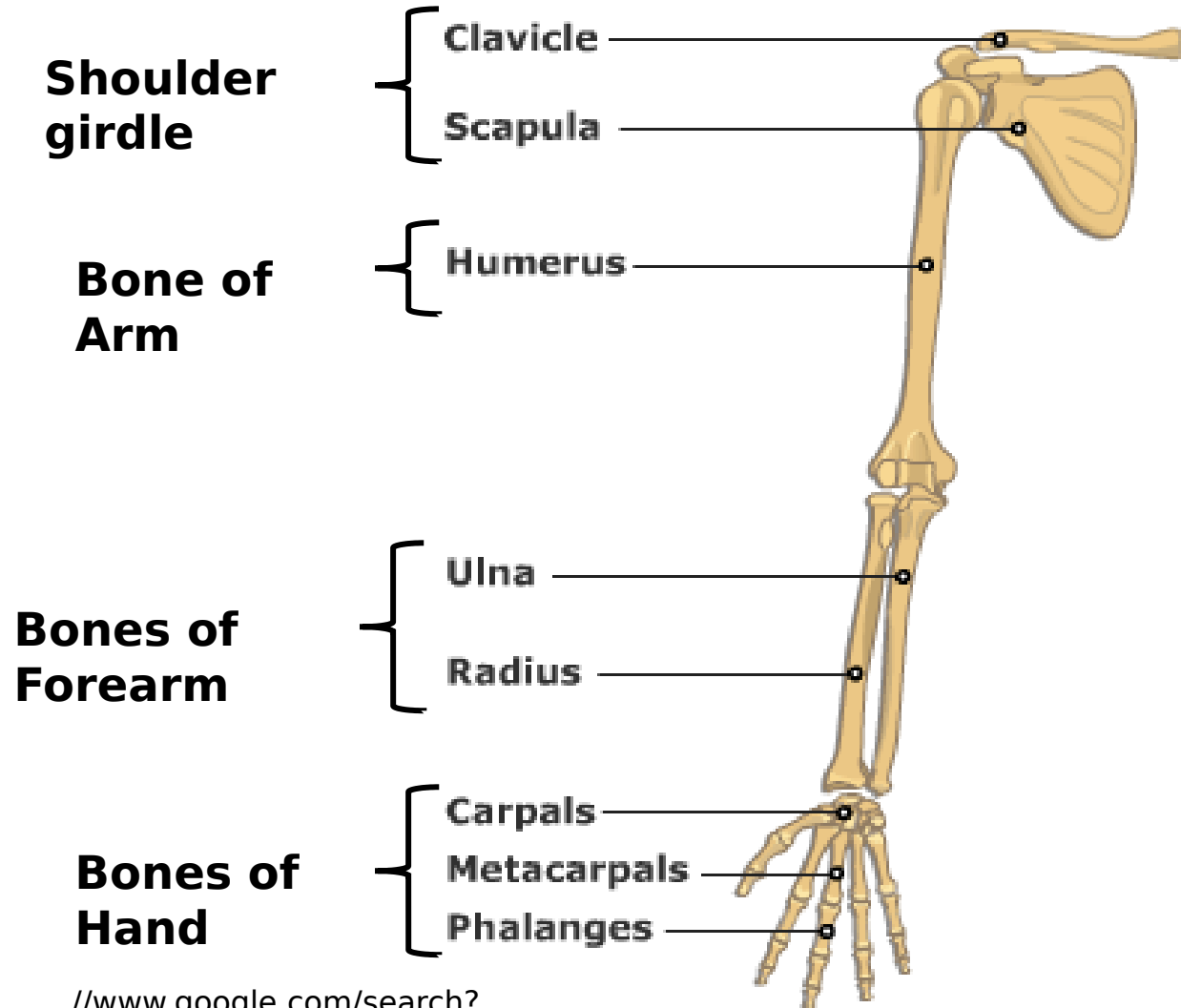
1. Identify bones of shoulder girdle, arm, forearm & hand.
2. Identify different groups of muscles of pectoral region, back, arm, forearm & hand.
3. Enumerate nerves & vessels in the upper limb.

Key points



1. Bones & muscles of the upper limb.
2. Nerves & vessels of the upper limb

Bones of Upper Limb



Frank H. Netter. 4th edition

**Carpal bones
8 in number
arranged into 2 rows**

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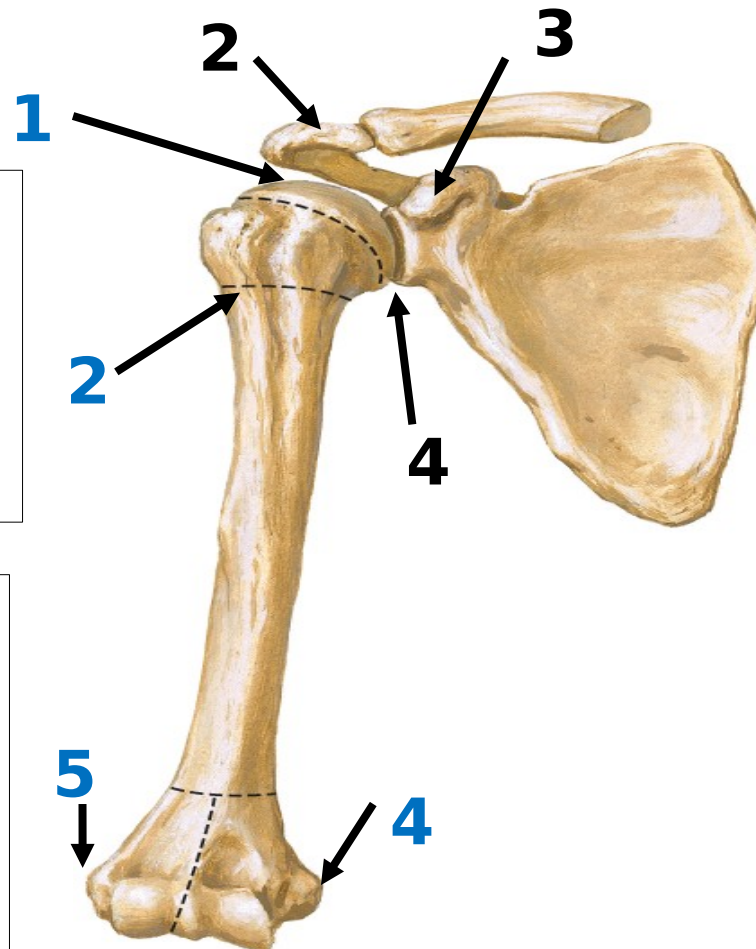
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Bones of Upper Limb



Scapula:

1. Spine
2. Acromion
3. Coracoid process
4. Glenoid cavity

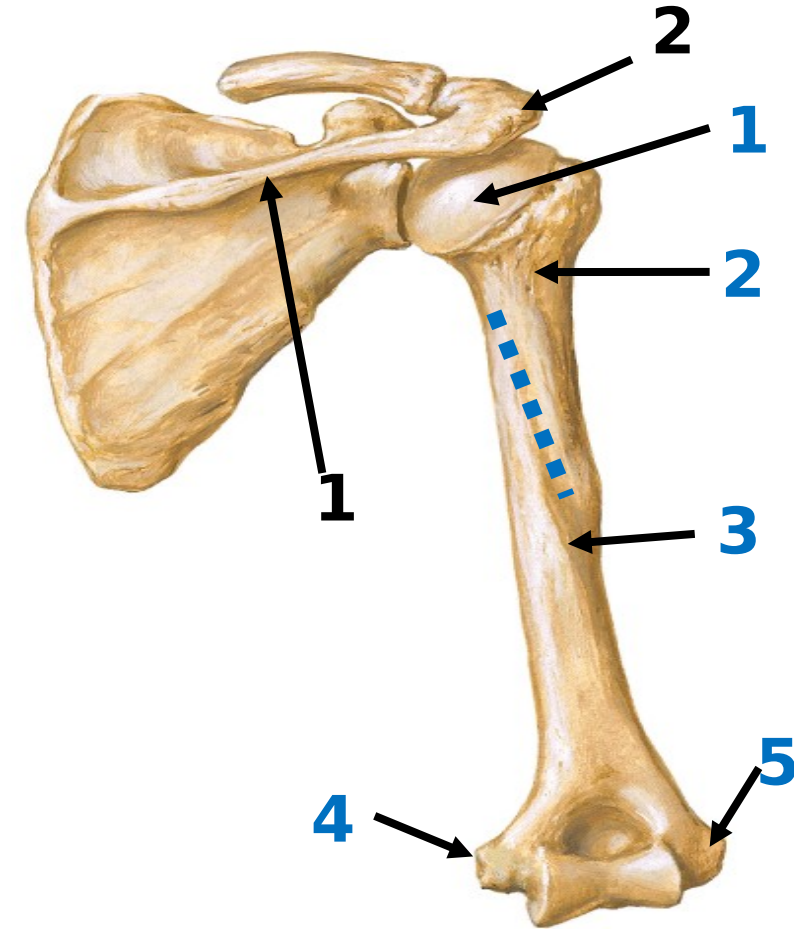


Front

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Humerus:

1. Head
2. Neck
3. Shaft (spiral groove)
4. Medial epicondyle
5. Lateral epicondyle



Back

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Bones of Upper Limb

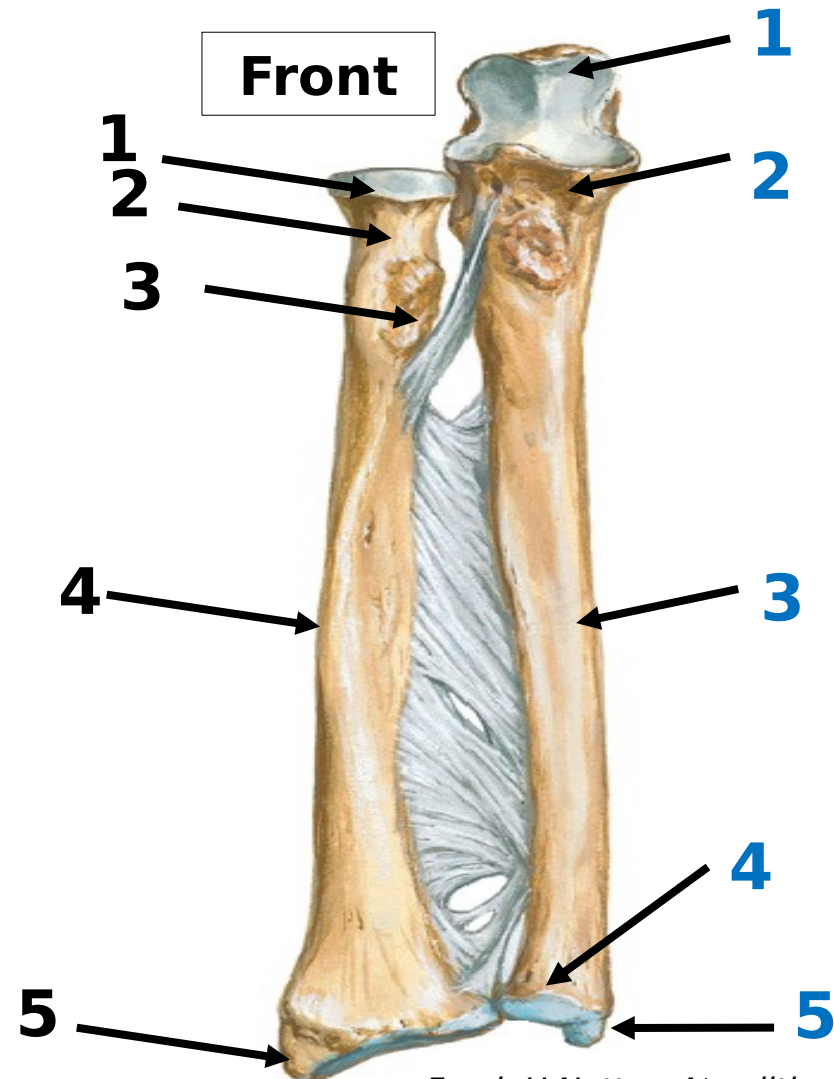


Radius:

1. Head
2. Neck
3. Tuberosity
4. Shaft
5. Styloid process

Ulna:

1. Olecranon
2. Coronoid process
3. Shaft
4. Head
5. Styloid process

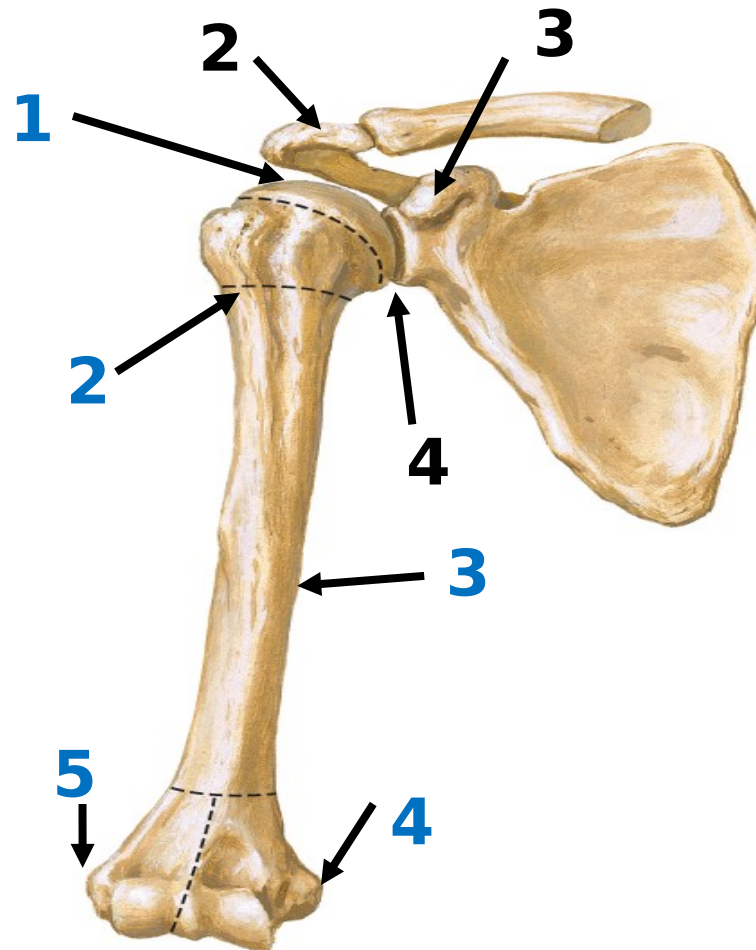


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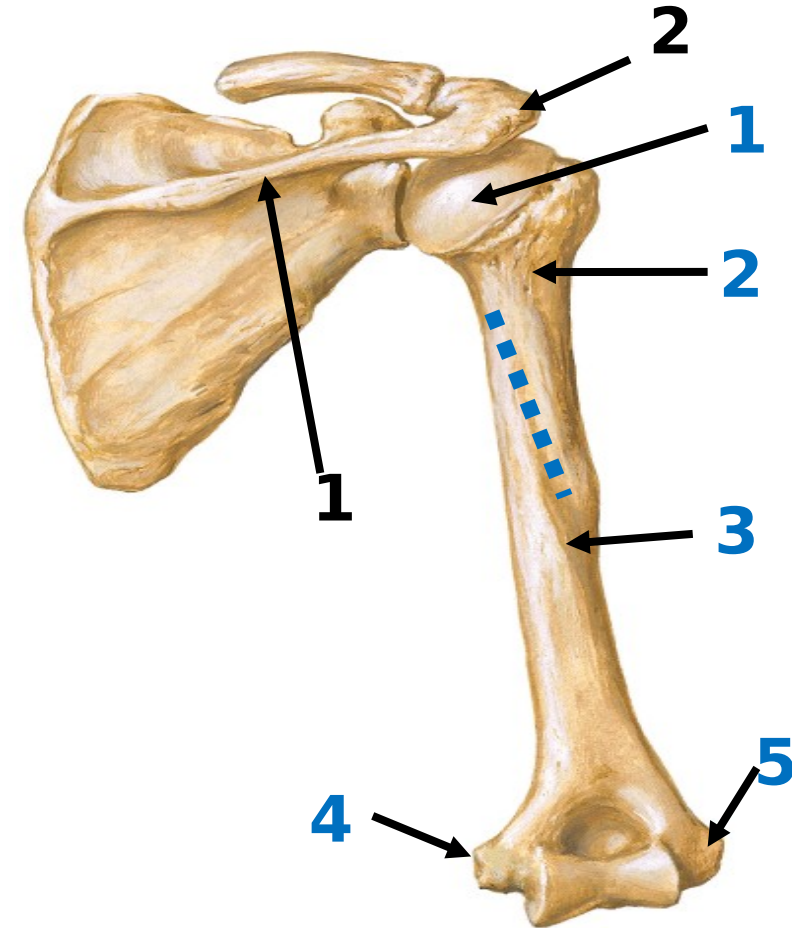
Quiz



Identify?



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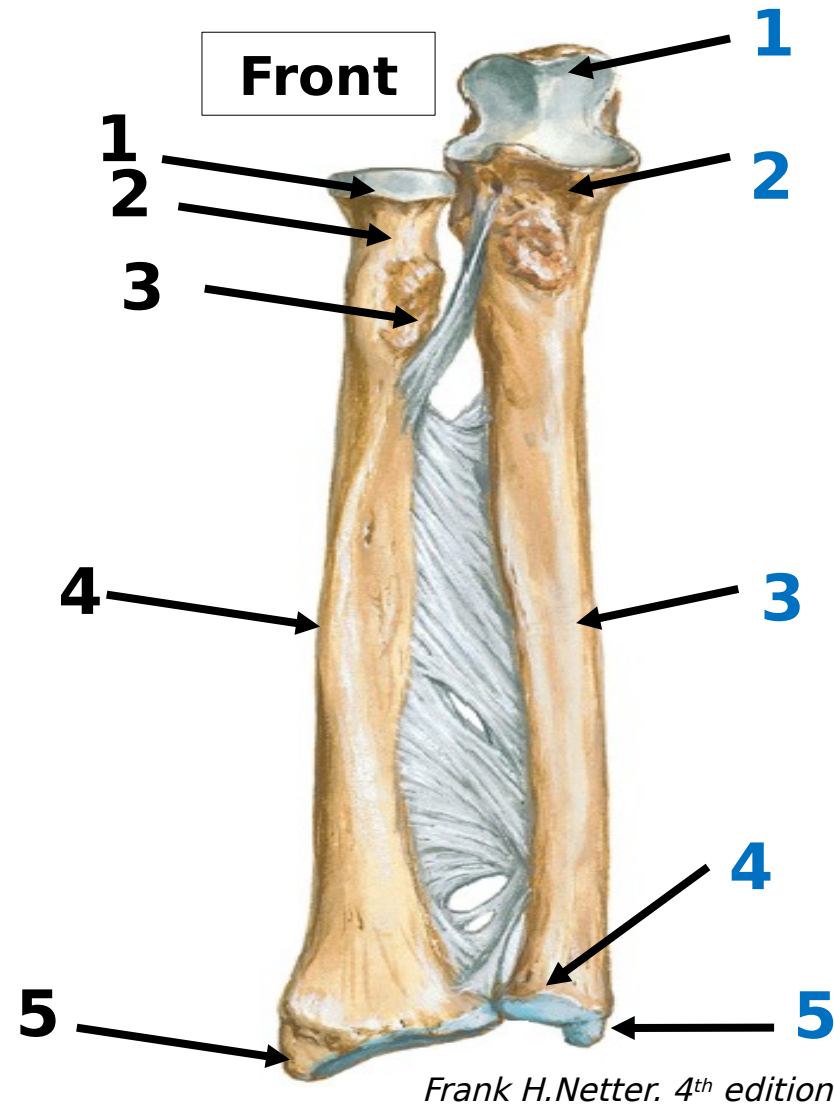


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Quiz 1 (bones)



Identify?



Regions of Upper Limb

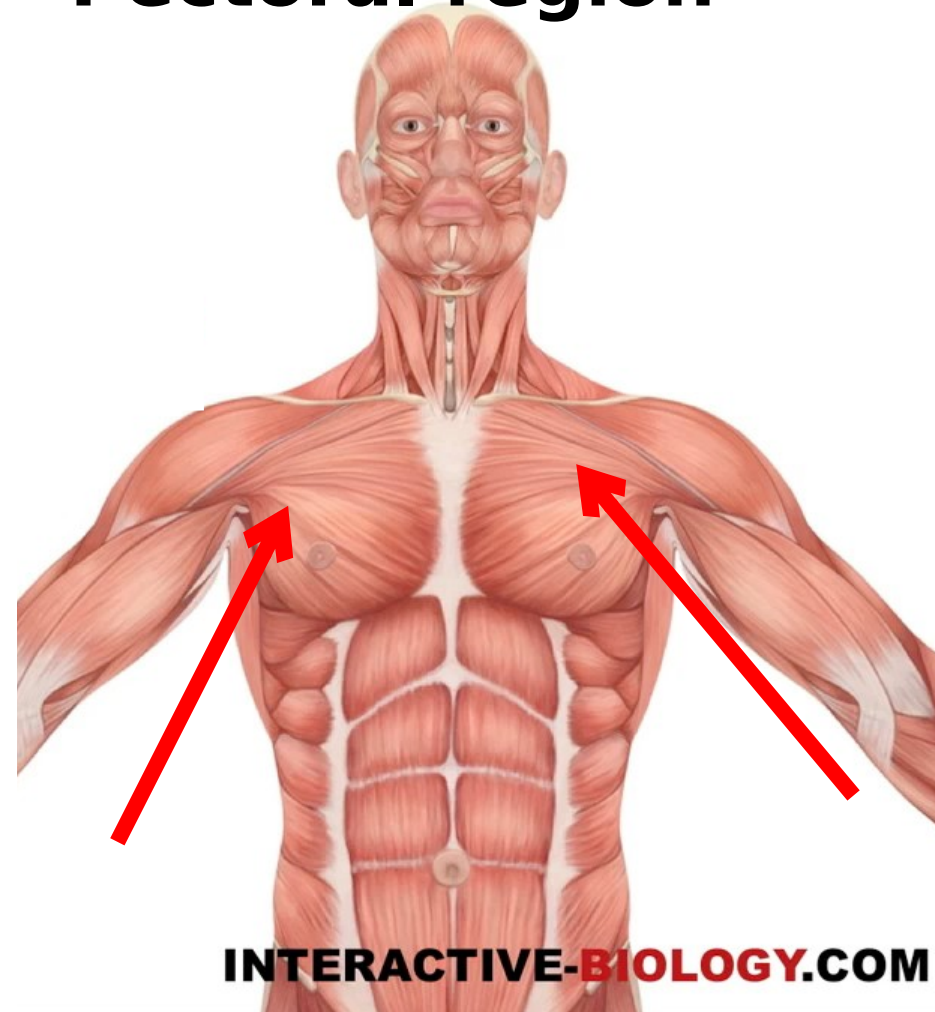


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Musculoskeletal & Integumentary module

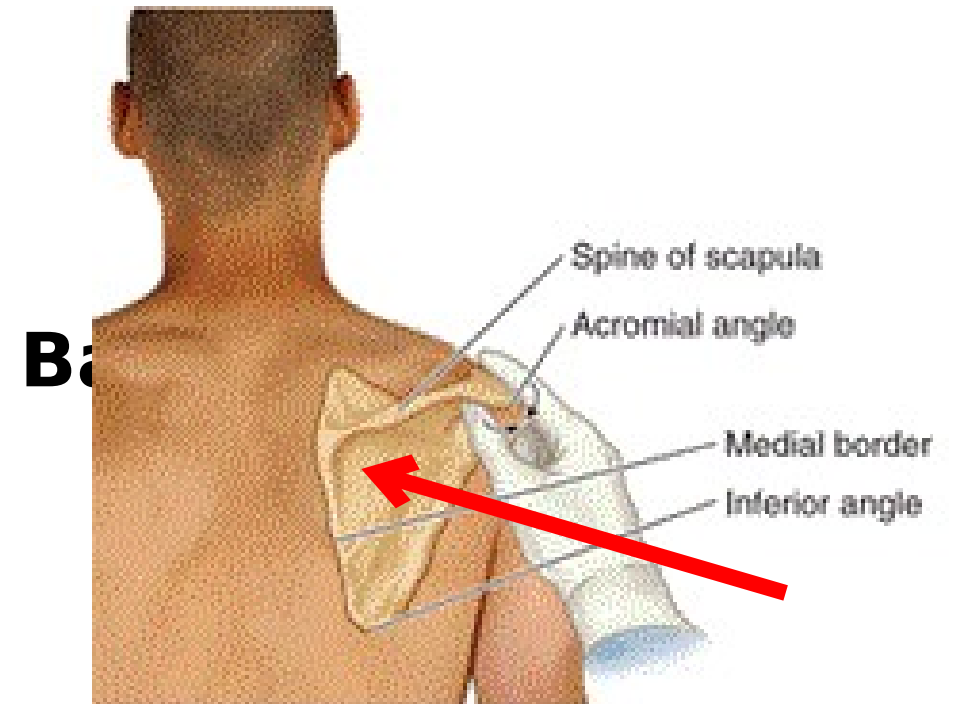
Regions of Upper Limb



Pectoral region



Back & scapular region



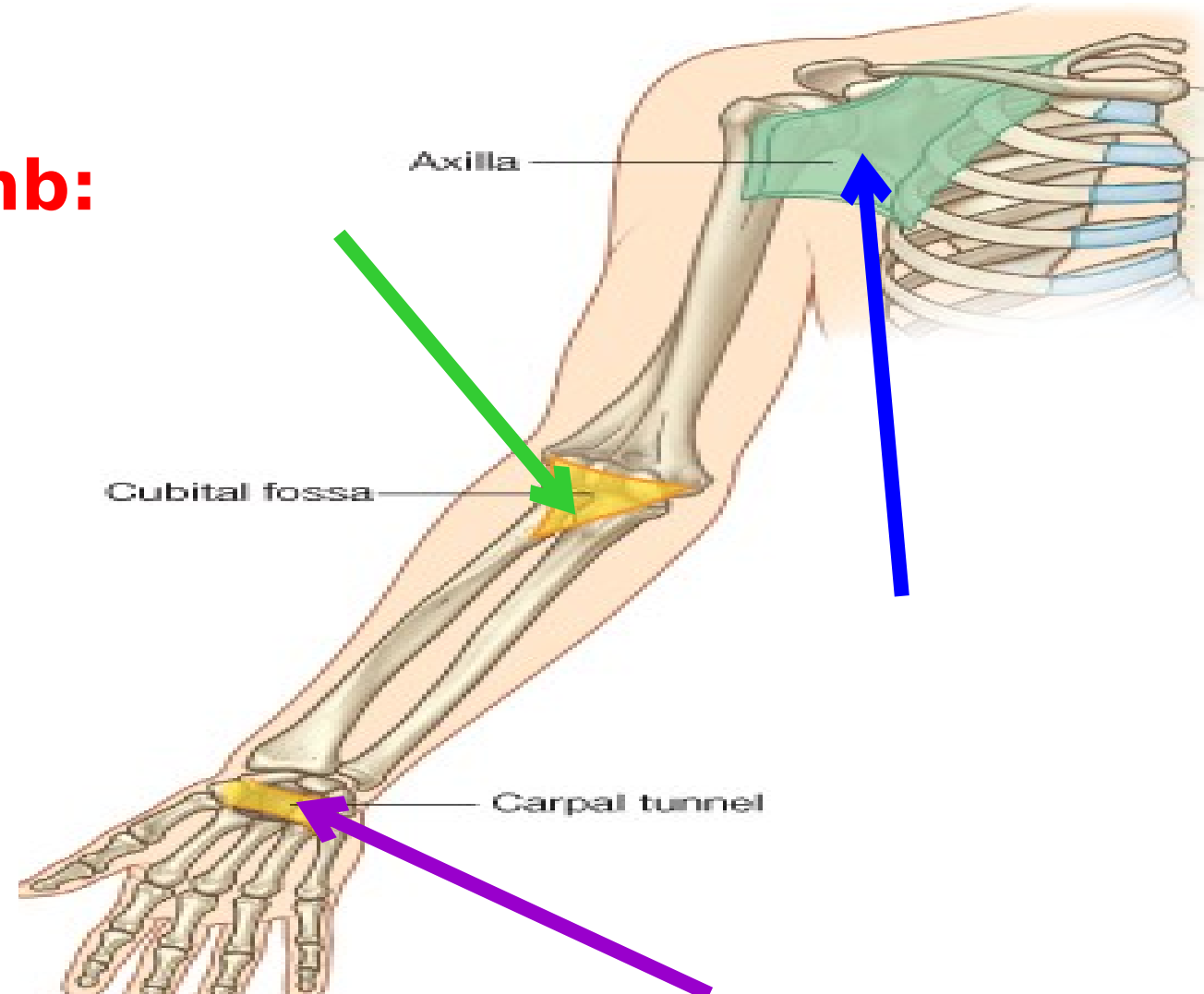
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Bones & regions of Upper Limb



Important Areas in upper limb:

- **Axilla:** arm pit
- **Cubital fossa:** in front of elbow
- **Carpal tunnel:** in front of carpal bones



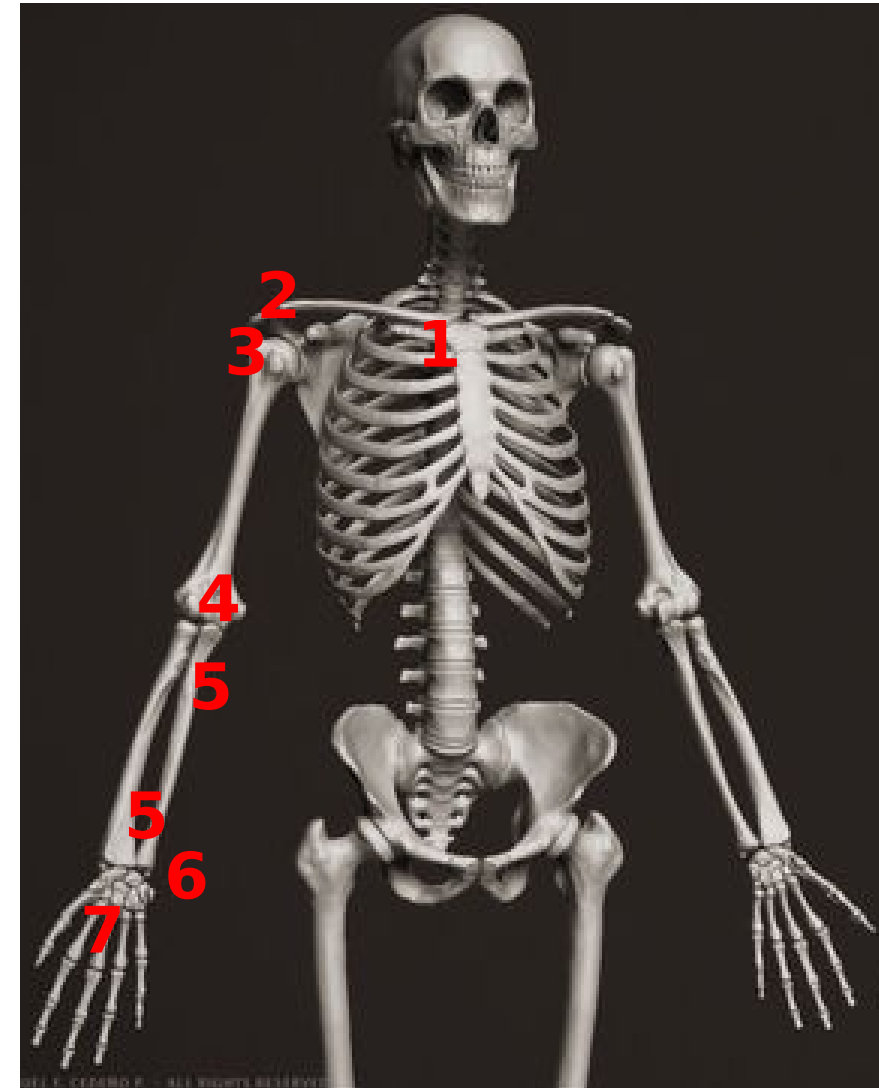
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Joints of Upper Limb



Joints:

1. Sterno-clavicular joint
 2. Acromioclavicular joint
 3. Shoulder joint
 4. Elbow joint
 5. Superior & inferior radio-ulnar joint
 6. Wrist joint
 7. Joints of the hand
- Shoulder girdle**

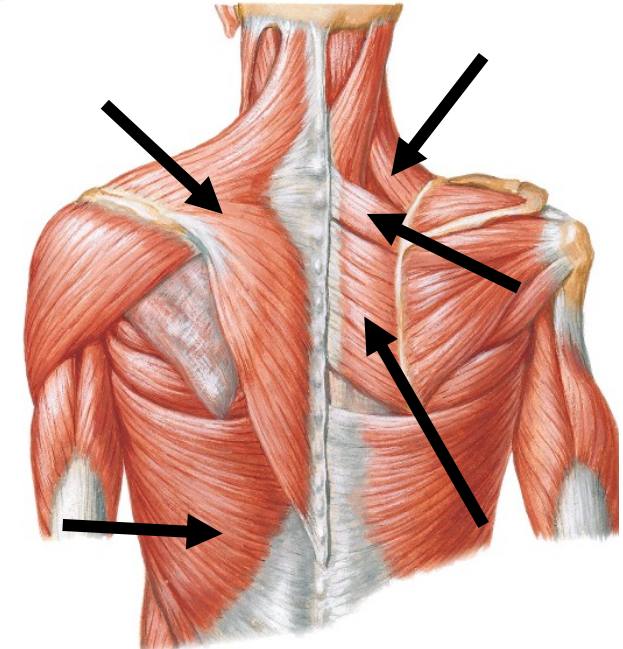


Muscles of the Upper Limb



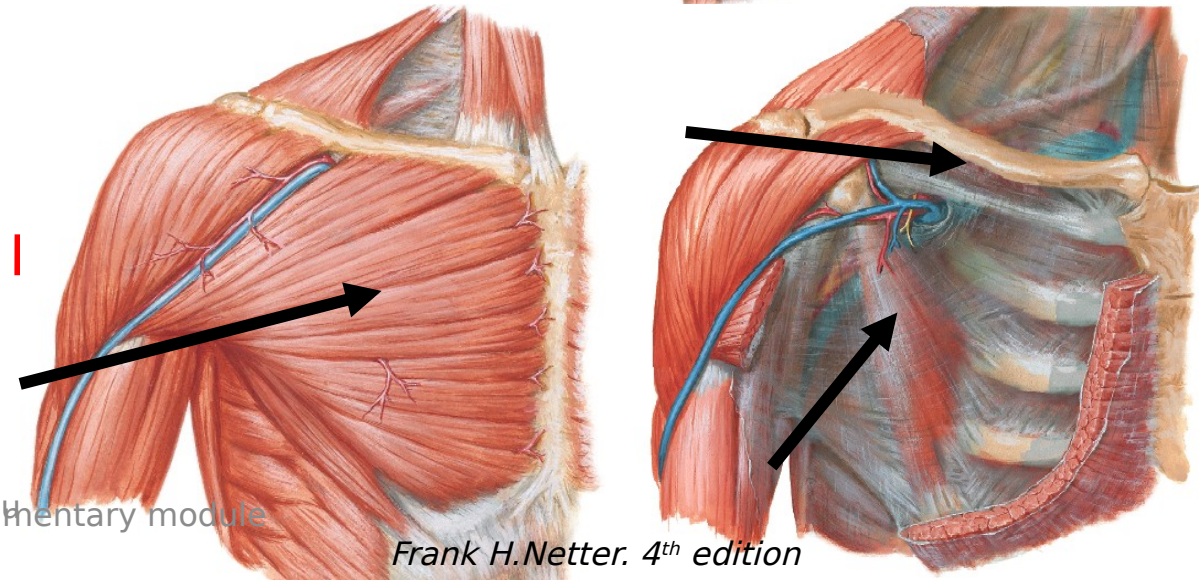
1. Muscles of the back (2 layers)

Connect upper limb to vertebral column



2. Muscles of pectoral region (2)

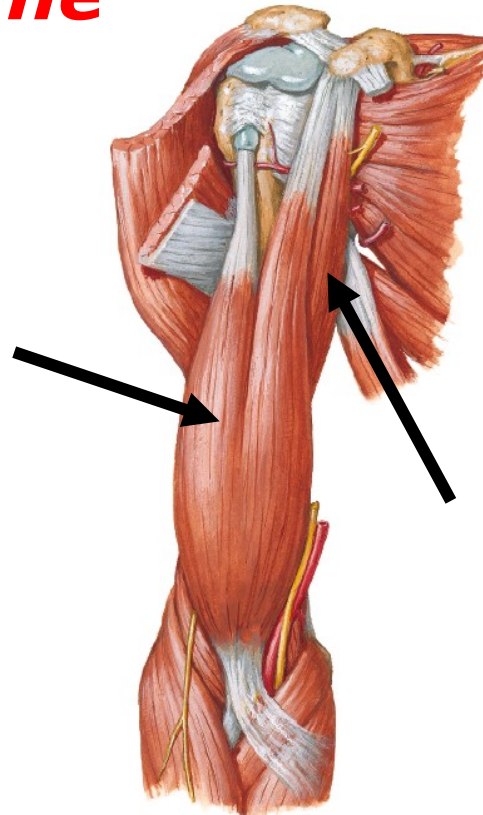
Connect upper limb to thoracic



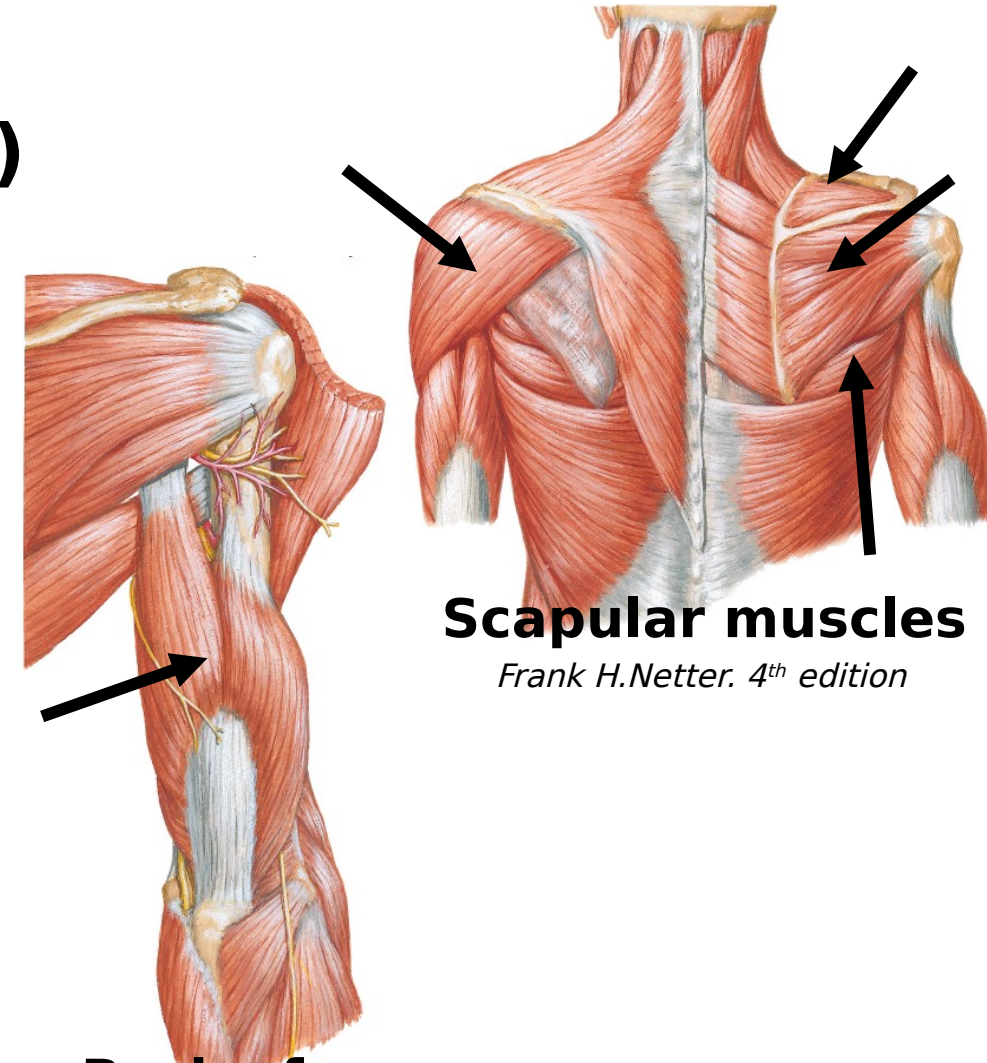
Muscles of the Upper Limb



3. Muscles of the shoulder (scapular) *Connect scapula to humerus*



Front of arm



Back of arm

Scapular muscles

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4. Muscles of the arm *(front & back)*

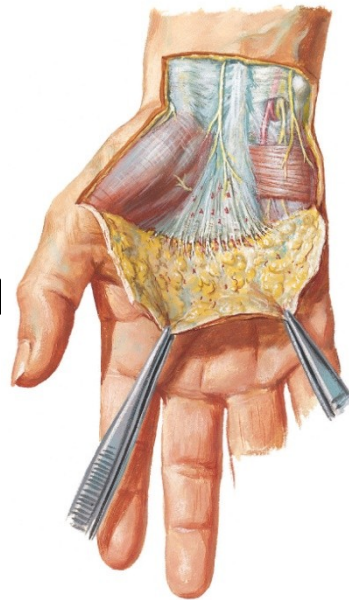
Muscles of the Upper Limb



5. Muscles of the forearm

Front (flexors) & back (extensors)

6. Muscles of the ha



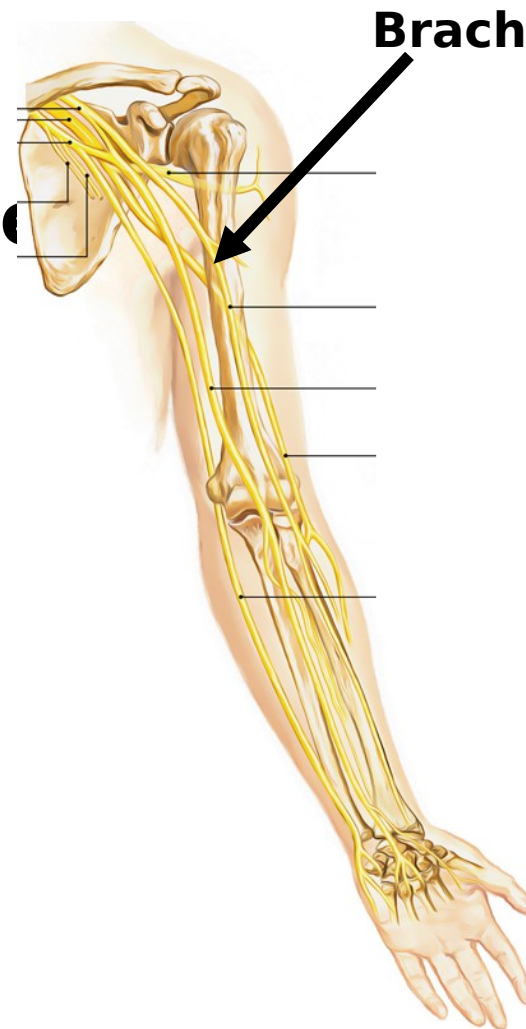
Back

Front

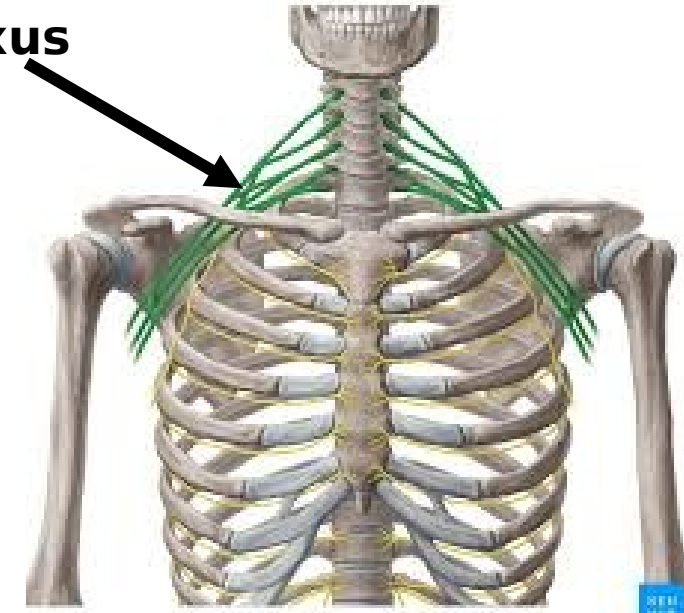
Nerves of the Upper Limb



- It is a plexus of nerves which passes from the **neck** to the **axilla** to enter the upper limb.
- It supplies **sensory** & **motor** to the upper limb.

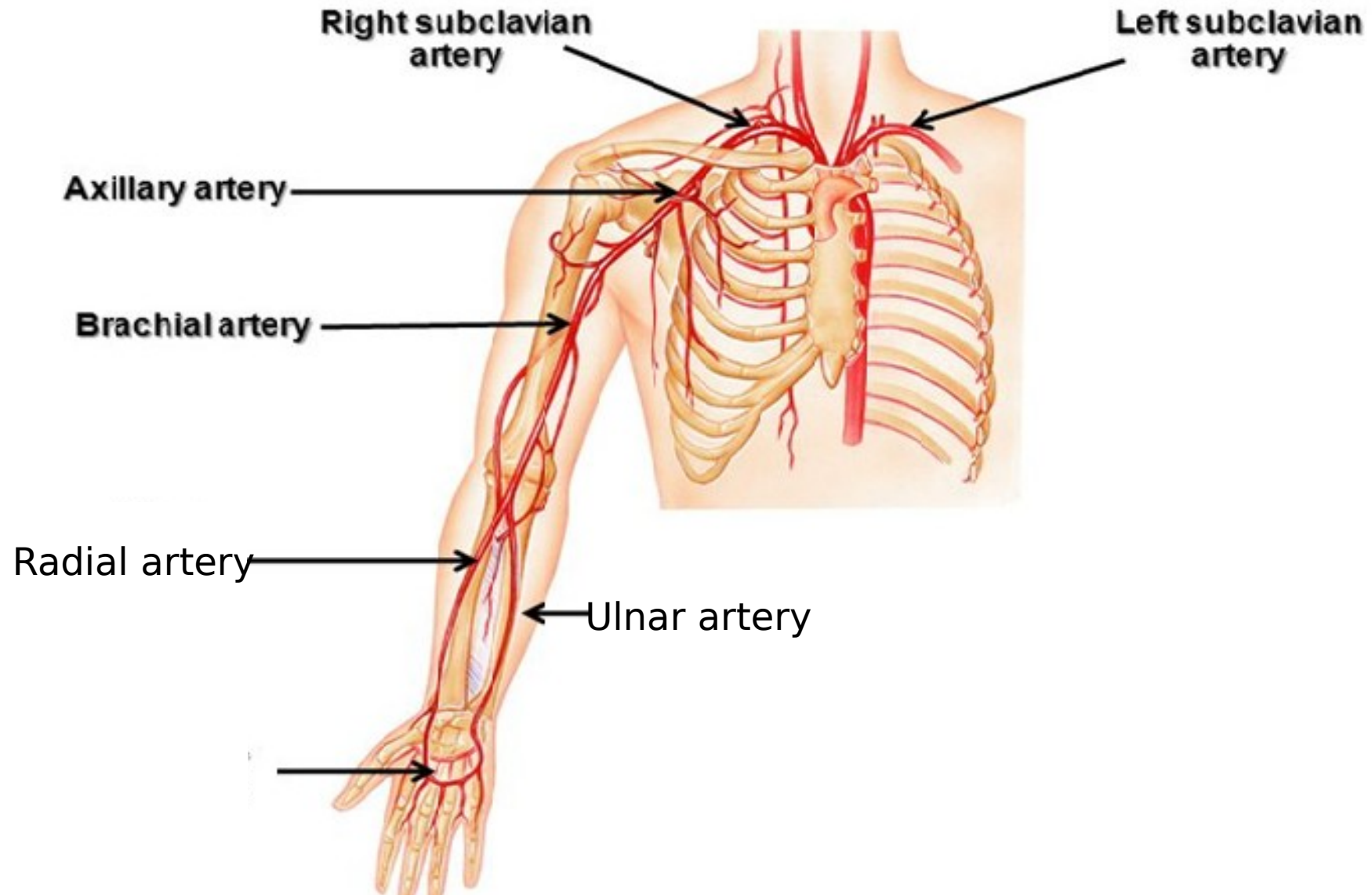


Brachial plexus



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Arteries of the Upper Limb



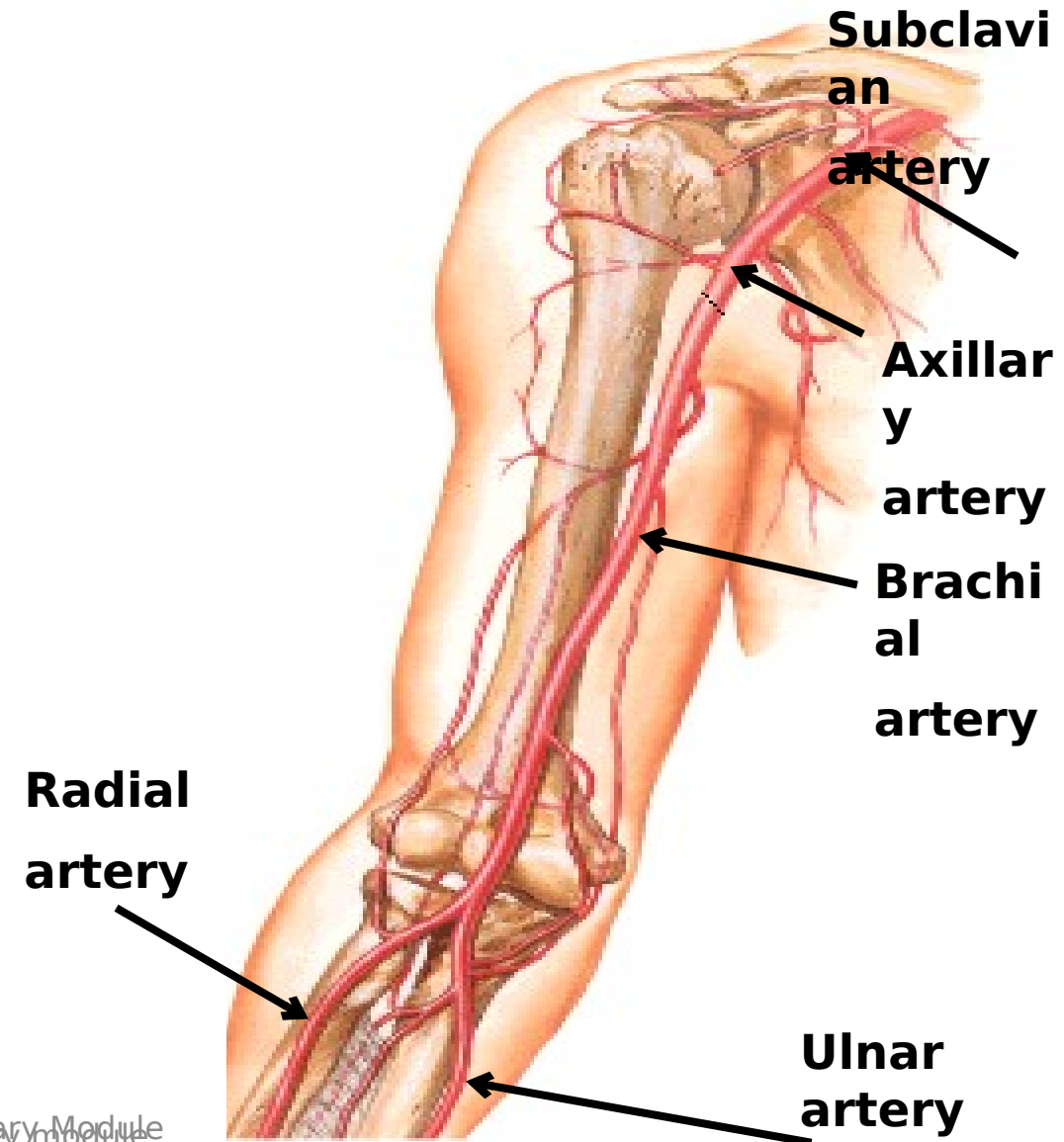
Vessels of the Upper Limb



Axillary artery begins as the continuation of subclavian artery at outer border of 1st rib.

And continue as Brachial artery at lower border of teres major.

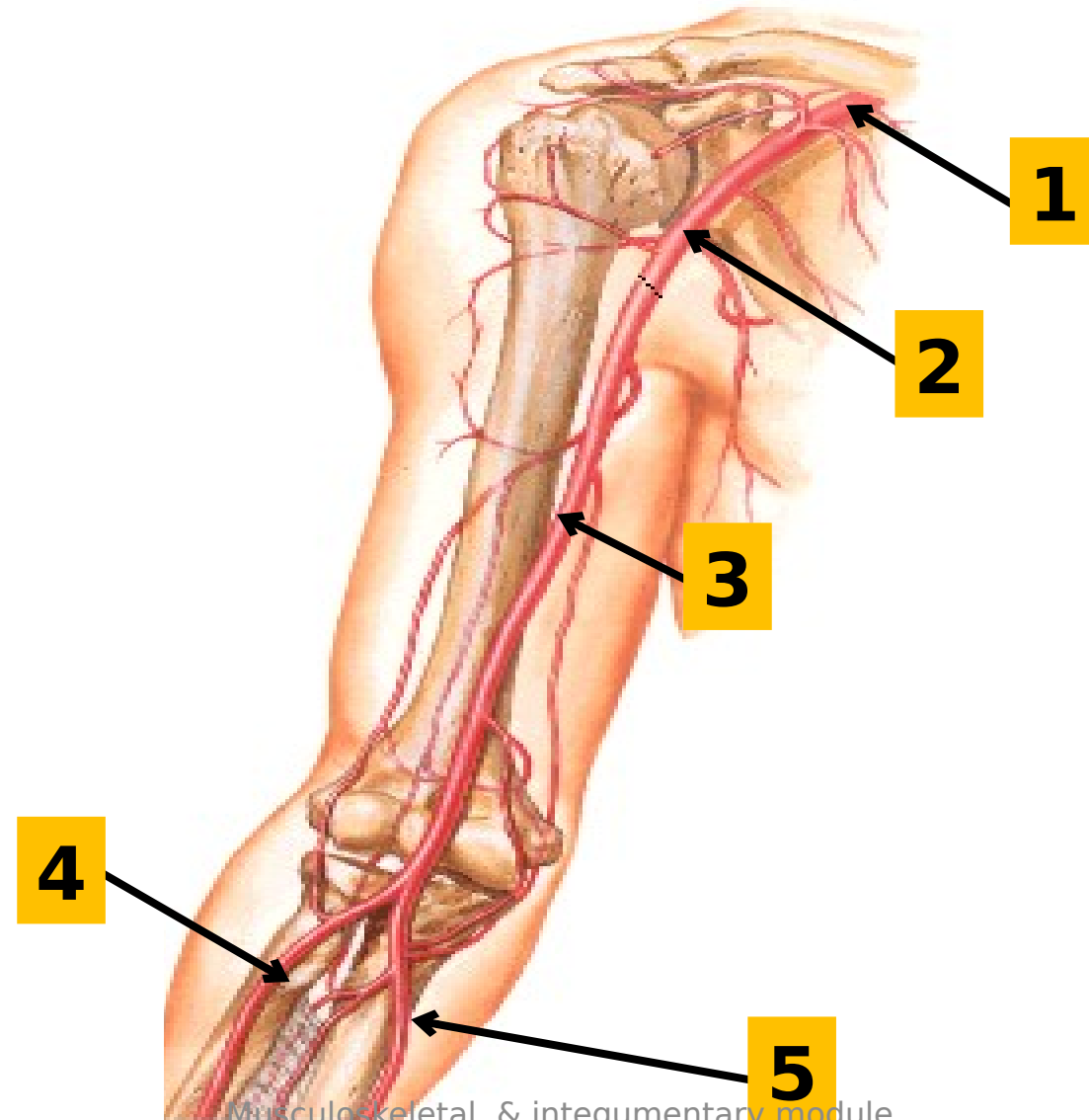
Which ends at the level of neck of radius by dividing into radial & ulnar arteries.



Quiz



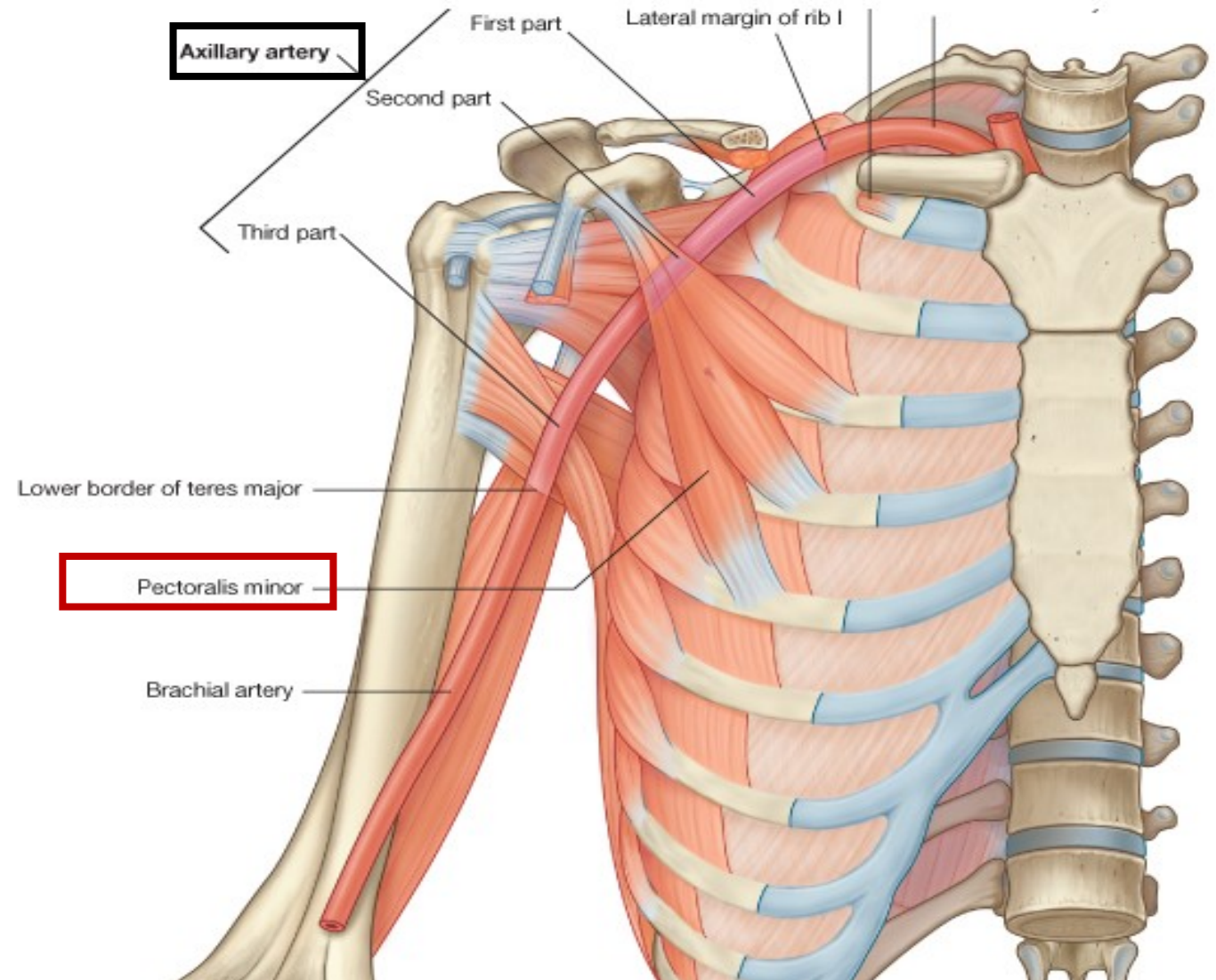
Identify?



Axillary artery



- The axillary artery is crossed by the **pectoralis minor** muscle
- It is divided into **three parts** according to the relation with the muscle.



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Axillary artery

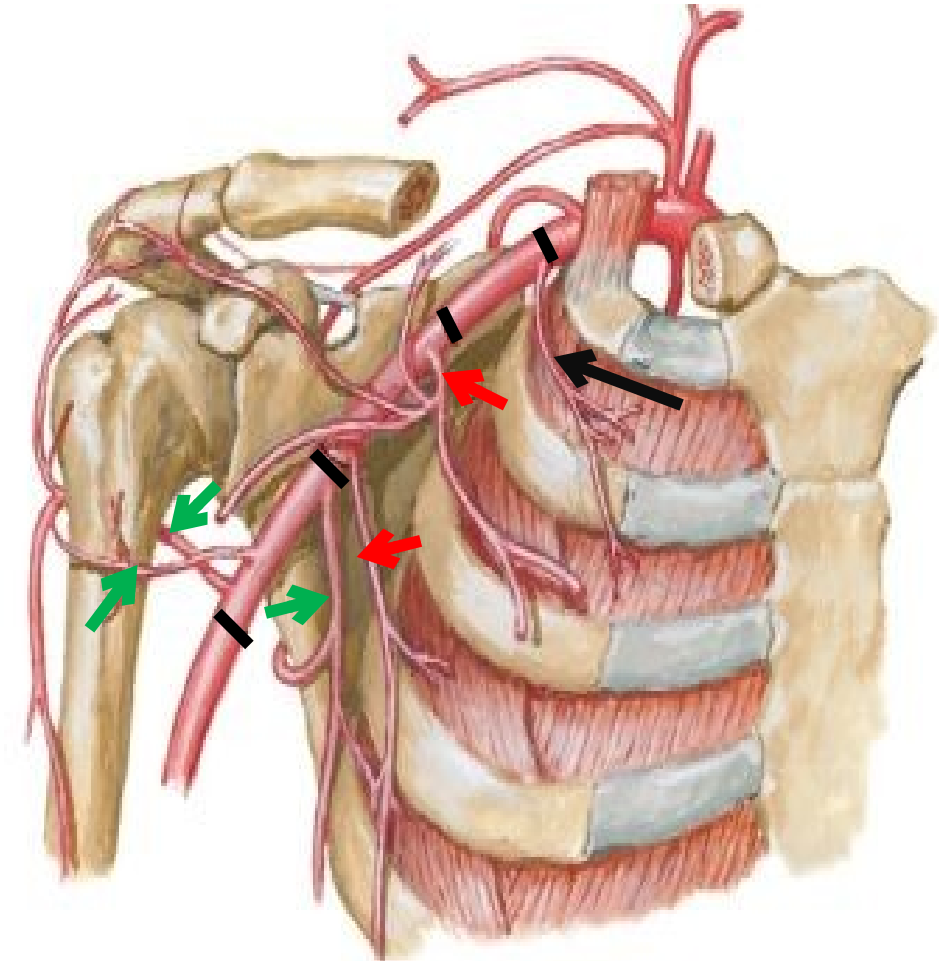


Branches of axillary artery

First part: (one branch)
(superior thoracic artery)

Second part: (two branches)
1-Thoracoacromial artery
2-Lateral thoracic artery

Third part (three branches)
1-Subscapular artery.
2-Ant. Circumflex A.
3-Post. Circumflex A.

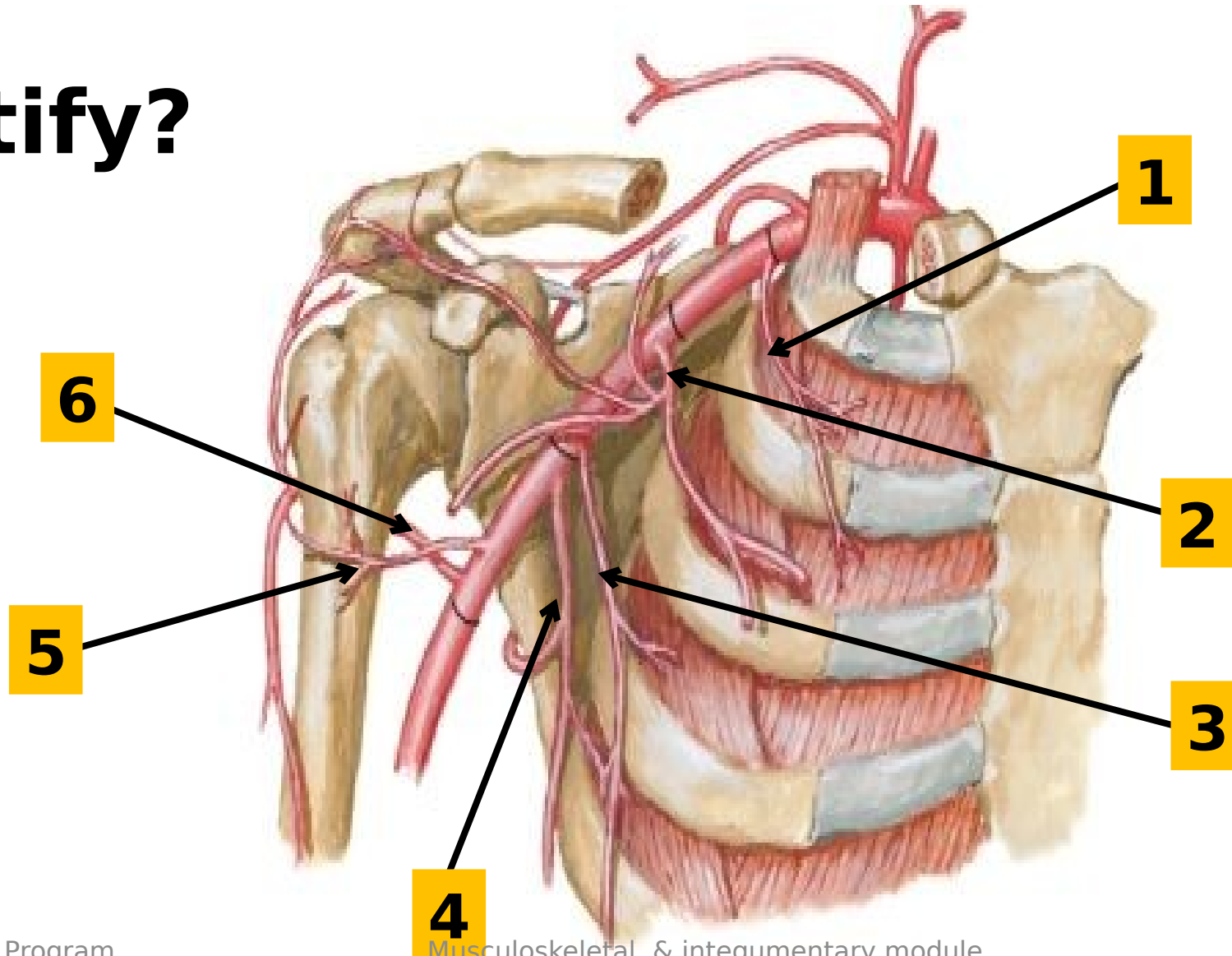


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Quiz



Identify?



Brachial artery



Branches of brachial artery:

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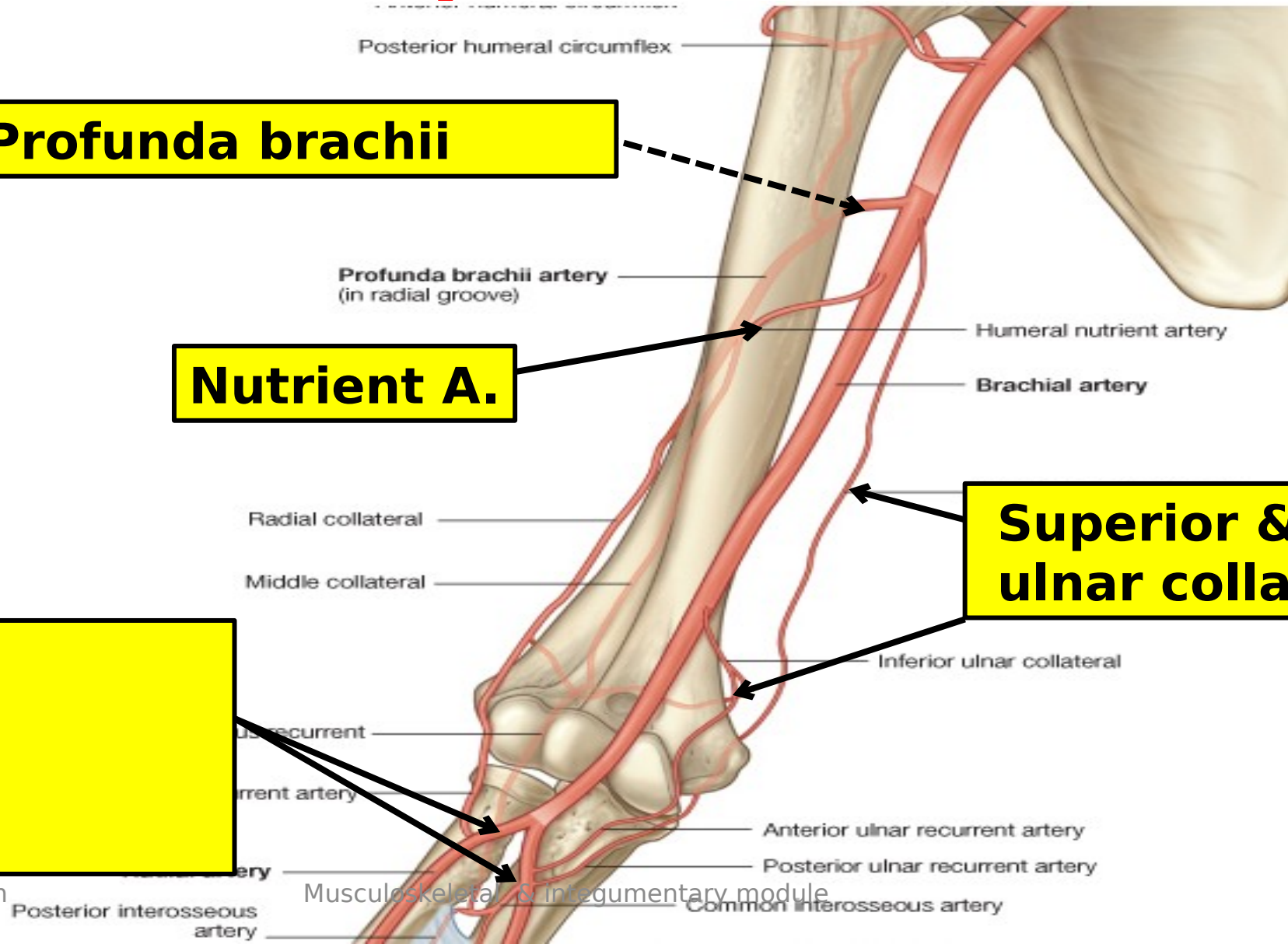
Profunda brachii

Nutrient A.

Superior & inferior ulnar collateral As

2 Terminal Branches:

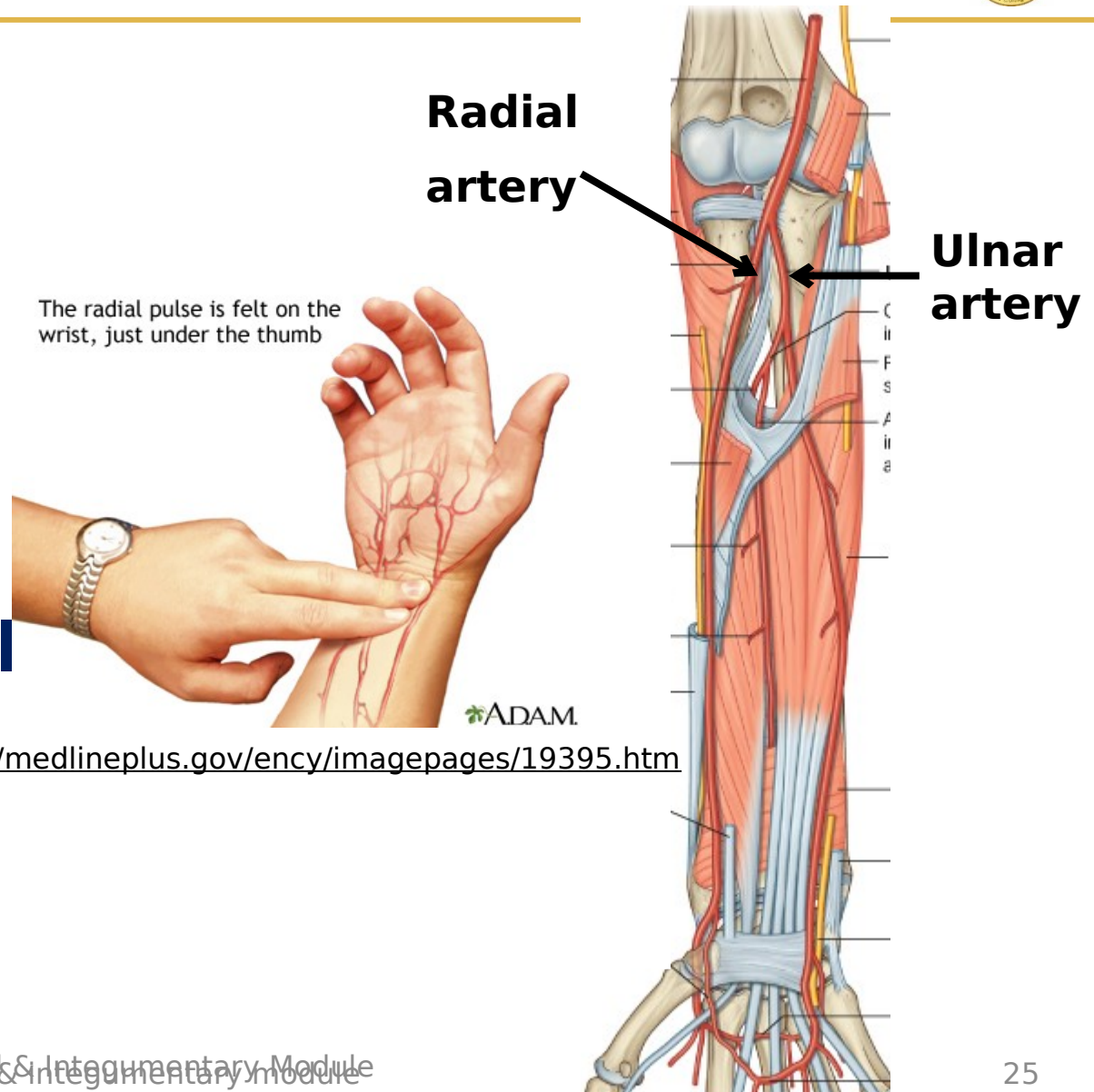
- **Radial A.**
- **Ulnar A.**



Radial & Ulnar arteries



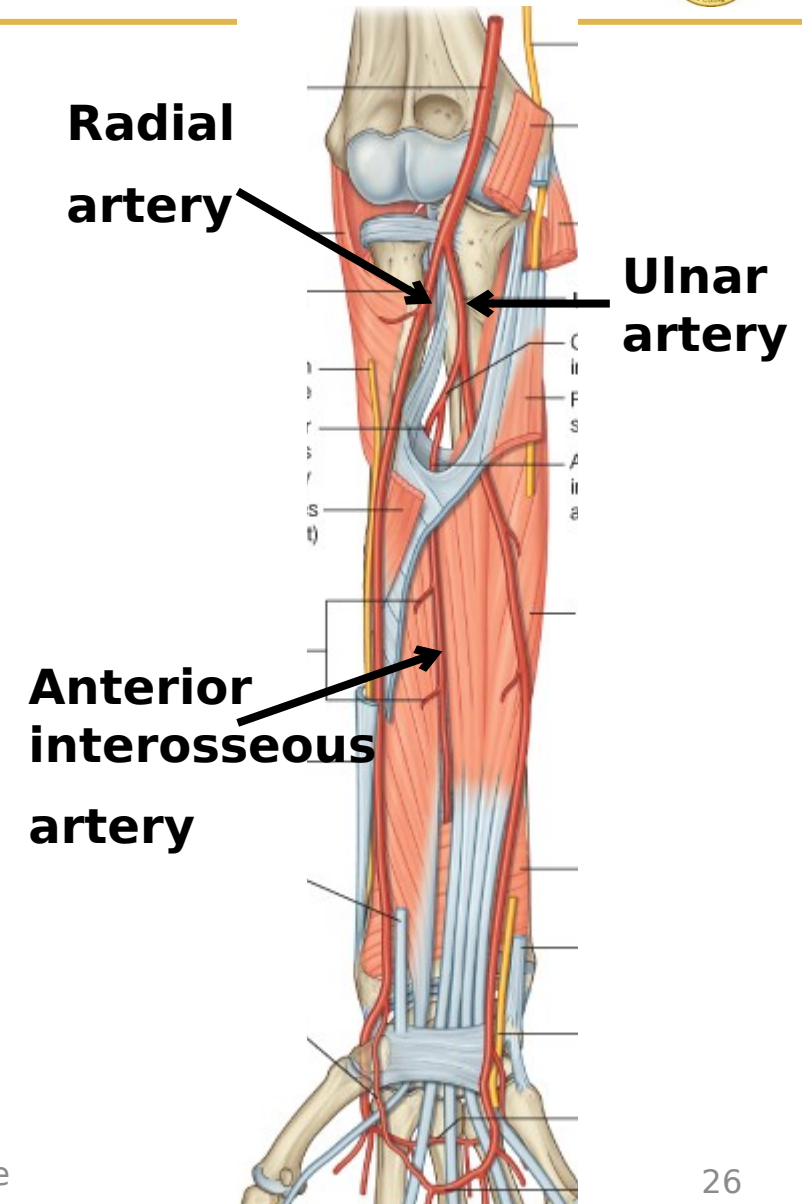
- **Radial & ulnar arteries** are the 2 **terminal branches** of brachial artery, begin at the level of **neck of radius**.
- **Radial artery (smaller)** descend laterally in the forearm to the hand (**radial pulse**).
- **Ulnar artery (larger)** descend medially in the forearm to the hand.



Radial & Ulnar arteries



- Both of radial & ulnar arteries give **recurrent** branches (elbow) & **muscular** branches.
- Both of radial & ulnar arteries share to form **carpal & palmar arches** (wrist).
- Ulnar artery
- Gives **common interosseous artery** which divides into anterior & posterior interosseous arteries



Veins of the Upper Limb



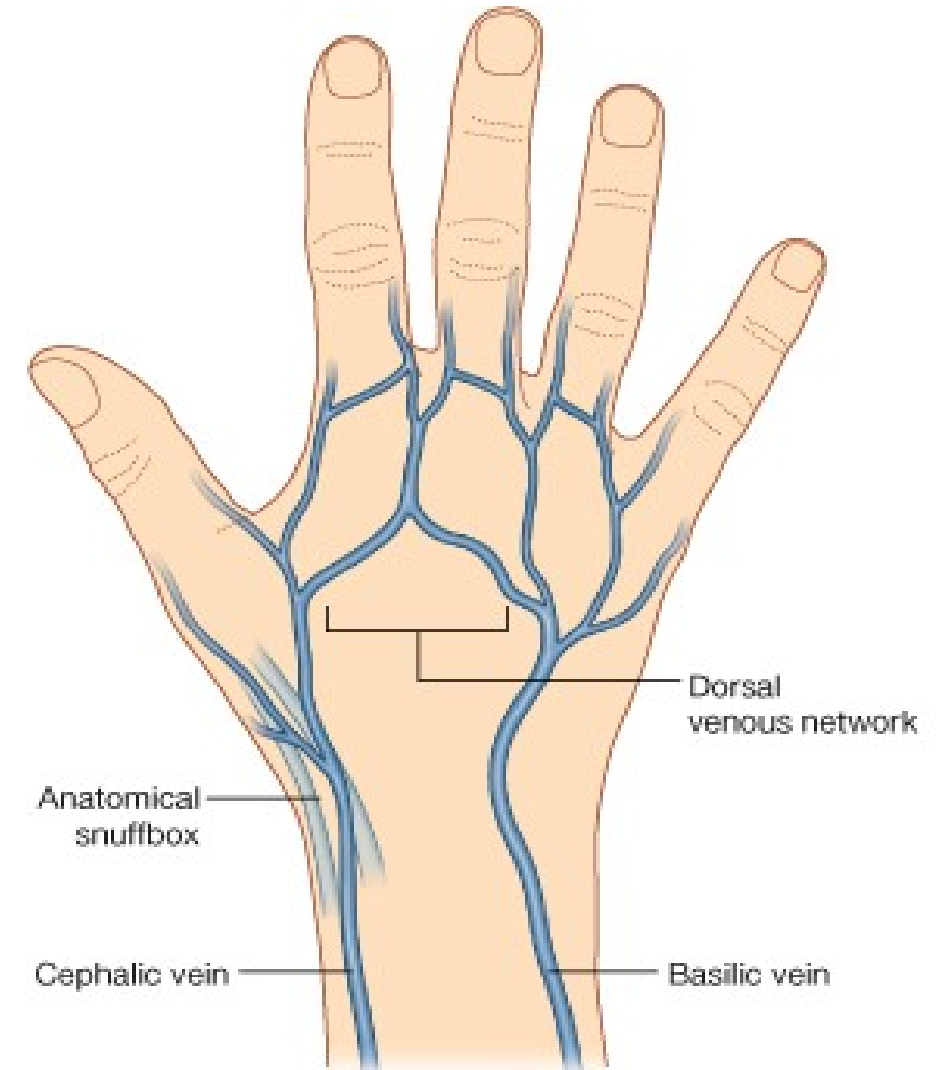
- Veins of the upper limb include:

Deep Veins:

(deep to the deep fascia & usually follow the arteries)

Superficial Veins:

Begin at the dorsum of the hand by dorsal venous arch which gives **cephalic vein** laterally & **basilic vein** medially.



Veins of the Upper Limb



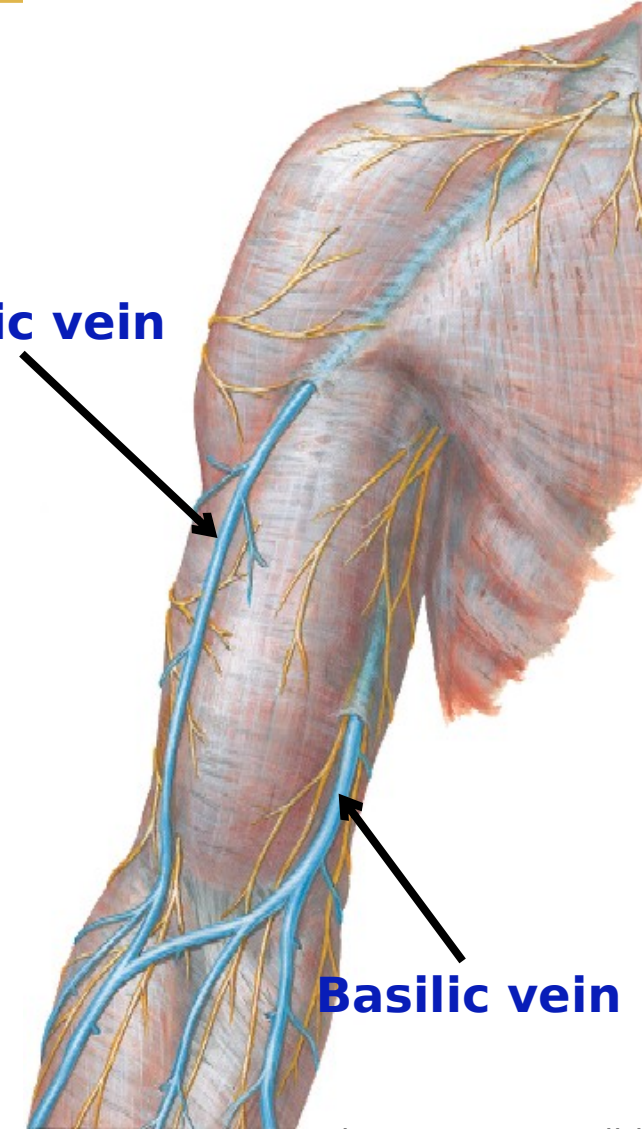
Cephalic vein:

- **Begins** at the lateral end of dorsal venous arch, ascends in superficial fascia.
- **Drains into** axillary vein

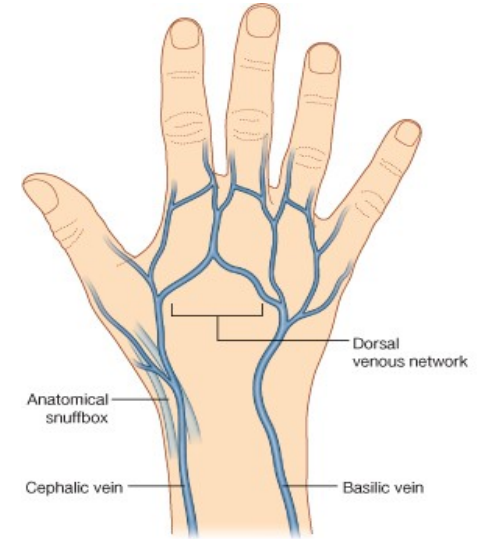
Basilic vein:

- **Begins** at the medial end of **dorsal venous arch**.
- **Continues** as **axillary vein** (lower border of teres major)

Cephalic vein



Basilic vein



Lecture Quiz 2 (Nerves & Vessels)



- Brachial artery divided at the level of neck of radius into medially &.....laterally.
- Dorsal venous arch of the hand gives.....medially &.....laterally.

SUGGESTED TEXTBOOKS



1. Frank H. Netter Atlas of Human Anatomy, 4th edition.

Summary



- Names of bones of shoulder girdle, arm, forearm & hand with important general features.
- Different groups of muscles of pectoral region, back, arm, forearm & hand.
- Brachial Plexus.
- Main vessels in the upper limb.



Thank You